

Remarks

The Final Office Action dated September 5, 2008, lists the following rejections: claims 1 and 2 stand rejected under 35 U.S.C. § 103(a) over the Kayser reference (U.S. Pat. No. 6,295,212); claims 3-7 and 12-13 stand rejected under 35 U.S.C. § 103(a) over the Kayser reference in view of the Balakrishnan reference (U.S. Pat. No. 6,813,168); and claims 8-11 stand rejected under 35 U.S.C. § 103(a) over the Kayser and Balakrishnan references in view of the TEA152X family data sheet by Philips. Applicant respectfully traverses these rejections. Applicant traverses all of the rejections and, unless explicitly stated by the Applicant, does not acquiesce to any objection, rejection or averment made in the Office Action.

Each of the rejections fails to provide a power converter having the claimed filter because the Kayser reference is mistakenly relied upon as teaching that the C1 capacitor of Figs. 1 and 2 is a non-electrolytic capacitor, as set forth in each of Applicant's claims. The Kayser reference clearly teaches that the C1 capacitor of Figs. 1 and 2 is an electrolytic capacitor for storing charge relative to ground, unlike other capacitors, electrolytic capacitors require a specific polarity-based orientation. Thus, in each of Figs. 1 and 2 the Kayser reference illustrates and describes the C1 capacitor as having its negative terminal connected to ground and, in Fig. 2, the C1 capacitor is illustrated with a "+" at its positive terminal. See also the Kayser reference at Col. 2:19-25 (indicating that C1 is a storage capacitor to store the incoming energy).

Relative to the Kayser reference, this distinction is important because the present invention is directed to a relatively small circuit for converting an AC signal to a sufficiently qualified/filtered DC signal for a switched mode power supply. For example, as many switched mode power supplies are high gain power supplies, artifacts and noise carried by insufficiently qualified/filtered DC signals would be grossly amplified and would likely denigrate the DC power signal provided by the switched mode power supply. The Kayser reference, however, has no relationship whatsoever to this type of circuit addressed by Applicant's invention. Because each of the rejections relying upon the Kayser reference has misinterpreted the storage capacitor (C1) of Figs. 1 and 2 as being a non-electrolytic capacitor, each of the rejections is improper and must be withdrawn.

Each of the rejections is also improper for failing to provide motivation for the asserted combination of teachings. As a general example, because the Kayser reference is directed to supplying large amounts of power (e.g., 85 to 265 VAC as indicated at Col. 1:46-49), it would be illogical for a skilled artisan to modify/replace the storage capacitor (C1) of Figs. 1 and 2 with a non-electrolytic capacitor which would be incapable of handling the stored charge as intended by the Kayser reference. While this substitution has not been advanced, Applicant notes that this difference is strong evidence that the Kayser reference teaches away from the asserted combination of teachings (each of which is based on Figs. 1 and 2 of the Kayser reference). As discussed in the M.P.E.P., the evidence teaches away from the asserted combination of teachings when the asserted modification of the primary reference would undermine the purpose or operation of the primary reference. Additional deficiencies in the rejections are discussed below.

Regarding claim 2, the skilled artisan would not routinely experiment with such values of the Kayser storage capacitor (C1) of Figs. 1 and 2 because the Kayser storage capacitor is an electrolytic capacitor. As noted above, a non-electrolytic capacitor having a capacitance of 100 nF, as claimed, would be incapable of handling the stored charge as intended by the Kayser reference, and therefore it would be illogical for the skilled artisan to implement a capacitor having such a capacitance for the storage capacitor (C1) of Figs. 1 and 2.

Regarding claims 3-7 and 12-13, Applicant submits that the Balakrishnan reference fails to cure the deficiencies of the Kayser reference noted above regarding the failure to teach and no reason to implement a non-electrolytic capacitor. In particular, the pi filter topology noted in Fig. 1 of the Balakrishnan reference includes only electrolytic bulk storage capacitors 103 and 104. Moreover, no valid reason has been presented why the skilled artisan would seek to incorporate the inductor 105 of the pi filter shown in Fig. 1 of the Balakrishnan reference into the circuit shown in the Kayser reference, particularly when the function served by the filter of the Balakrishnan reference is already performed by other means in the Kayser reference. As taught in the Balakrishnan reference, the storage capacitors 103 and 104 and the inductor 105 are part of EMI filtering circuitry (see, e.g., Balakrishnan Col. 2:31-40). Kayser addresses EMI by controlling discharge of the storage capacitor (C1) only during the intervals when the

diode (D1) is not conducting (see, e.g., Kayser Col. 2:19-44). As such, addition of the EMI filtering circuitry from the Balakrishnan reference would be superfluous, and thus unmotivated.

Furthermore, and with regard to claims 5 and 6, Applicant submits that none of the applied references teaches or suggests the claimed arrangements of the recited filter components. In particular, none of the applied references discloses the arrangement of the non-electrolytic capacitor and the filter coil to filter distortions caused by the SMPS IC, as recited in claim 5. While the Examiner alleges on page 6 of the Office Action that Fig. 2 of Kayser indicates a SMPS IC, no correspondence is identified for the claimed SMPS IC distortion filtering function or of structure for performing such a function. Moreover, none of the applied references discloses a power converter filter that includes both an electrolytic capacitor and a non-electrolytic capacitor, along with an inrush resistor and a coil, to provide a DC voltage output at a circuit node that connects the inrush resistor and one electrode of the electrolytic capacitor, as recited in claim 6. Applicant notes that claim 6 has been re-written in independent form to include all the elements recited in the claims from which it depends. Applicant further notes that new claims 14 and 15 have been added, dependent on claim 6, to recite aspects specific to Fig. 1 relating to the connections among the various recited components, including a reference to ground ("common"). Accordingly, these claims are distinguished over the applied art for at least the same reasons as claim 6.

Regarding claims 8-11, Applicant submits that the TEA152X reference fails to cure the deficiencies noted above with respect to the Kayer and Balakrishnan references regarding the failure to teach and no reason to implement a non-electrolytic capacitor. Moreover, the TEA152X reference discloses only the use of a full bridge rectifier, and does not teach or suggest the use of a single diode rectifier as recited in Applicant's claims. The Examiner has provided no evidence that a SMPS IC such as shown in the TEA152X reference could be used with anything other than a full bridge rectifier as taught in the TEA152X reference. Applicant submits that Applicant's own Specification provides the only support on the record for the use of a single diode rectifier with a SMPS IC such as shown in the TEA152X reference.

In addition to exhibiting the deficiencies discussed above, Applicant submits that none of the applied references provides any appreciation for the use of a non-electrolytic capacitor in a filter of the input section of a power converter such as claimed by Applicant. As set forth in the Specification, Applicant recognized that the input circuit section of a SMPS IC power converter can be simplified without sacrificing performance by providing a single diode rectifier along with a single electrolytic capacitor for smoothening the output signal of the diode. Applicant further recognized the inclusion of a non-electrolytic capacitor in the input circuit filter, even though the non-electrolytic capacitor is much smaller than the electrolytic capacitor and therefore unsuitable for storing the rectified input signal. Applicant appreciated that the non-electrolytic capacitor need not participate in smoothening of the output signal, and rather may be combined with a coil to filter distortions caused by the SMPS IC so that the main network is not polluted. Rather than the small size of the non-electrolytic capacitor being detrimental (as it would be in the Kayser reference, for example, as discussed above), Applicant has found that better SMPS IC distortion filtering may be achieved using a non-electrolytic capacitor having a much smaller series resistance than that of the smoothening electrolytic capacitor. As a result, a power converter that is cheaper and has fewer input section components may be achieved without sacrifice in performance. None of the applied references teach or suggest the use of a non-electrolytic capacitor in the input filter of such a power converter, nor do any of the applied references suggest any appreciation or recognition for so including a non-electrolytic capacitor.

In view of the remarks above, Applicant believes that each of the rejections has been overcome and the application is in condition for allowance. Should there be any remaining issues that could be readily addressed over the telephone, the Examiner is asked to contact the agent overseeing the application file, Peter Zawilski, of NXP Corporation at (408) 474-9063 (or the undersigned).

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